

## WHAT IS CLAIMED IS:

1. A direct methanol fuel cell including a multiple number of connected unit cells, each composed of a fuel electrode element of a microporous carbon material, an electrolyte layer formed on the outer surface of the fuel electrode element, an air electrode layer formed on the outer surface of the electrolyte layer, characterized in that each unit cell is connected to a fuel feeder having an infiltration structure and coupled with a fuel reservoir for storing liquid fuel, so as to supply liquid fuel thereto.
2. The direct methanol fuel cell according to Claim 1, wherein the terminal end of the fuel feeder is connected to a spent fuel reservoir.
3. The direct methanol fuel cell according to Claim 1, wherein the fuel reservoir is constructed of a replaceable cartridge structure.
4. The direct methanol fuel cell according to Claim 1, wherein the fuel supply system for supplying liquid fuel from the fuel reservoir to the fuel feeder includes an valve element and/or a collector element.
5. The direct methanol fuel cell according to Claim 1, wherein the fuel electrode element and the fuel feeder adjoining the fuel electrode element are formed of a porous material and/or bundled fibers presenting capillarity.
- 25 6. The direct methanol fuel cell according to Claim 5,

wherein the fuel electrode element provides the function of a fuel feeder.

7. The direct methanol fuel cell according to Claim 2, wherein the fuel feeder is arranged from the fuel reservoir to the spent fuel reservoir, and the magnitudes of capillarity of the fuel reservoir, the fuel electrode element and/or fuel feeder adjoining the fuel electrode element and the spent fuel reservoir are selected so that the fuel reservoir < the fuel electrode element and/or fuel feeder adjoining the fuel electrode element < the spent fuel reservoir.

10 8. The direct methanol fuel cell according to Claim 1, wherein the microporous carbon material is a carbon composite forming which is made up of amorphous carbon and powdery carbon, having micro continuous pores.

15 9. The direct methanol fuel cell according to Claim 8, wherein the powdery carbon is composed of, at least, one selected from the group of highly ordered pyrolytic graphite (HOPG), kish graphite, natural graphite, artificial graphite, carbon nanotubes and fullerenes.